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Trafficking and Technology: Exploring the Role of Digital Communication Technologies in the Belgian Human Trafficking Business

Sigrid Raets[1] · Jelle Janssens[1]

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Abstract
Over the past few years, the agenda-topping issue of human trafficking is increasingly bracketed with the use of digital technologies. Though the trafficking-technology nexus is a growing area of public and policy concern, as far as empirical research is concerned, the subject is still a relatively open field. As a result, quite a few unknowns regarding the interaction between technological developments and trafficking in persons remain unresolved. In this context, the present research paper principally aims to build on the existent body of literature in order to broaden our comprehension of the matter at hand. Based on a systematic literature review and interviews with convicted offenders as well as anti-trafficking practitioners in Belgium, this paper presents an overview of the various ways in which technology can be leveraged both in the perpetration and the counteraction of human trafficking activities. In addition, the question of how technology relates to the traditional workings of trafficking is considered from a cyber-criminological point of view. That is, a connection is drawn between the use of technological tools by human traffickers and our current understanding of the business of trafficking in persons.

Keywords Trafficking in human beings · Internet · Information and communication technologies · Organized crime · Cybercrime

✉ Sigrid Raets
Sigrid.Raets@UGent.be

Jelle Janssens
Jelle.Janssens@UGent.be

[1] Institute for International Research on Criminal Policy (IRCP), Faculty of Law and Criminology, Ghent University, Universiteitstraat 4, 9000 Ghent, Belgium

Introduction

Technology is everywhere. Over the course of a few decades, innovations in information and communication technologies have become an indispensable part of everyday life (Stalans and Finn 2016). Against this background, it should come as no surprise that the Internet and related technological advances have left their mark on crime in general and serious and organized crime in particular (Europol 2017b; Savona and Riccardi 2015; Mitchell and Boyd 2014). As regards the latter category, the use of technology is primarily associated with international trafficking activities (Lavorgna 2015), including trafficking in human beings. In a way, the Internet and human trafficking have a shared history. From the very outset, the Internet has been exploited for sex trafficking (Hughes 2002, 2014; Mendel and Sharapov 2016; Leary 2014). More generally speaking, the Internet and the sex trade are closely intertwined (Di Nicola et al. 2017; Ryder and Reid 2012). The sex industry was the driving force behind technological innovations such as search engines, database management systems, and accelerated credit card transactions (Verham 2015; Kunze 2009). Technology, in turn, has reshaped the working spaces and conditions of prostitution (Finn and Stalans 2016). Or, as Verham (2015, p. 4) succinctly puts it: "[n]either the Internet nor sex trafficking would look like it does today without its counterpart."

Within this framework, the assumption that technology plays a central role in mediating human trafficking activity is finding more and more acceptance (Mendel and Sharapov 2016; Musto and Boyd 2014). As yet, there is little empirical research to support this notion (Boyd et al. 2011; Williams 2013). Our understanding of the use of technology in both sex and labor trafficking, though improving, is still in a nascent state (Latonero et al. 2012; Mendel and Sharapov 2016; Greiman and Bain 2013). At the same time, numerous fears and anxieties crop up out of concern that things will take a turn for the worse by reason of technology (Hillman et al. 2014; Kloess et al. 2014; Thakor and Boyd 2013; Chung et al. 2017). However, new opportunities in combating human trafficking also present themselves in the wake of technological developments (Boyd et al. 2011; Dixon 2013).

Considering the regional focus of this study, Belgium stands out as one of the most targeted countries by human traffickers. More specifically, this nation is primarily known as a transit and destination country for human trafficking operations. Historically speaking, Belgium has taken on a pioneering role in the fight against trafficking in persons (Shentov et al. 2019). In this context, the empirical reality of human trafficking in this country remains surprisingly under-researched. By extension, the role of new technologies in the Belgian human trafficking market is still far from fully elucidated.

In short, this research paper intends to explore the intersection between trafficking and technology. To this end, this paper will first delineate the role of technology in the human trafficking modus operandi, on the heels of a brief methodological section. Next, the opportunities and challenges inherent to the use of technology in the fight against trafficking in persons are discussed. To conclude this paper, the findings from the previous two sections are considered from a cyber-criminological perspective with the aim of linking what we already know about the human trafficking business to the use of technology.

Methodology

The present study draws on a systematic review of the current literature as well as qualitative interviews.[1] Regarding the former method of research, a systematic literature review was chosen with the intention of taking stock of the current body of literature on the subject of the trafficking-technology nexus while utilizing a methodical and transparent strategy to identify relevant studies. For this literature review, we combined two search strategies with an eye towards conducting a more extensive search for eligible publications, namely a database search and reference screening. First off, a keyword search of electronic databases was carried out. To reflect the cross-cutting nature of the subject under review, this first search strategy covers databases from various scientific disciplines (as for example, psychology, sociology, and computer sciences). More precisely, the following databases were surveyed: Web of Science, Scopus, Sociological Abstracts, PsycARTICLES, ProQuest Computer Science Database, IEEE Xplore, Elsevier ScienceDirect, Hein Online, Sage Journals, EBSCO, and JSTOR. This makes for a total of eleven included online databases. The following keyword string was used to locate on-topic studies: ("human trafficking" OR "trafficking in persons" OR "trafficking in human beings" OR "sexual exploit*" OR "labo*r exploit*" OR "economic exploit*" OR "sex trafficking") AND (technolog* OR online OR virtual OR computer* OR cyber OR digital). The results of these database searches were subsequently assessed against a number of inclusion and exclusion criteria. Considering the fact that important developments in Internet usage such as the widespread adoption of social media only took place over the last decade (see for example Andrews et al. 2018; Broughton 2009), only studies published from 2009 onwards are deemed eligible. In addition, studies published in languages other than English or Dutch were excluded on account of the limitations of the researchers' proficiency in foreign languages. No restrictions were placed on the study design or research method, nor on the type of publication. Studies were, however, selected based on their relevancy for this literature review. In practical terms, only studies that address the topic of technology employment in human trafficking operations or, alternatively, in the fight against trafficking in human beings were included. Lastly, studies had to meet a certain quality threshold in order to be eligible for selection. The basic quality criteria that were applied in this literature review are adapted from the appraisal promts suggested by Dixon-Woods et al. (2006). In this regard, studies were evaluated on the following aspects: are the rationale and purpose of the research clearly stated; is the research design appropriate for the purposes of the research; is the research carried out in a methodologically rigorous way; and are the conclusions appropriate to the data gathered?

The initial database search yielded 1682 hits. After the removal of duplicate results, the remaining 1381 publications were subjected to a three-stage selection procedure. In the first stage, the titles of the studies were examined, resulting in the exclusion of 1189 publications. The relevancy of the remaining 192 results was subsequently judged on the basis of their abstracts. This second stage of the selection procedure led to the exclusion of 108 studies. The third and final stage consisted of the full-text appraisal of the remaining results. Thirty-one

[1] The research that has been conducted for this research paper is to be considered as a spin-off of a research project that was funded by the European Commission, FINOCA 2.0 (Shentov et al. 2019). FINOCA 2.0 focuses on the financing of trafficking of human beings for sexual and labor exploitation and the impact of ICT on the business model of traffickers. More in particular, new and additional interviews have been conducted for this paper, but the initial contacts and access have been procured during the FINOCA 2.0 project.

publications that were either not accessible or did not meet the inclusion criteria were removed. The resulting 53 studies, then, formed the basis of a citation snowballing process, which is also the second search strategy of this literature review. Concretely, the bibliographies of the selected studies were screened, in addition to conducting forward searches for publications that refer to the works that were previously identified. The reference screening strategy yielded an additional 29 studies. In total, this systematic review encompasses 82 studies. By way of illustration, Fig. 1 shows a flow chart of the screening process. In the interest of clarity, the publications that were included in the literature review are marked with an asterisk in the bibliography of this article. Below, this article offers a narrative synthesis of the results of this literature search.

Supplementary to the above-described literature review, this research paper also builds on qualitative interviews. A total of sixteen face-to-face interviews were conducted. The interview sample covers both convicted trafficking offenders ($N = 3$) and professionals working in the anti-trafficking field in Belgium ($N = 13$). The latter were selected based on their expertise in dealing with human trafficking cases and are predominantly affiliated with sectors such as the Belgian Public Prosecutor's Office, the Belgian Federal Police (mainly with regard to

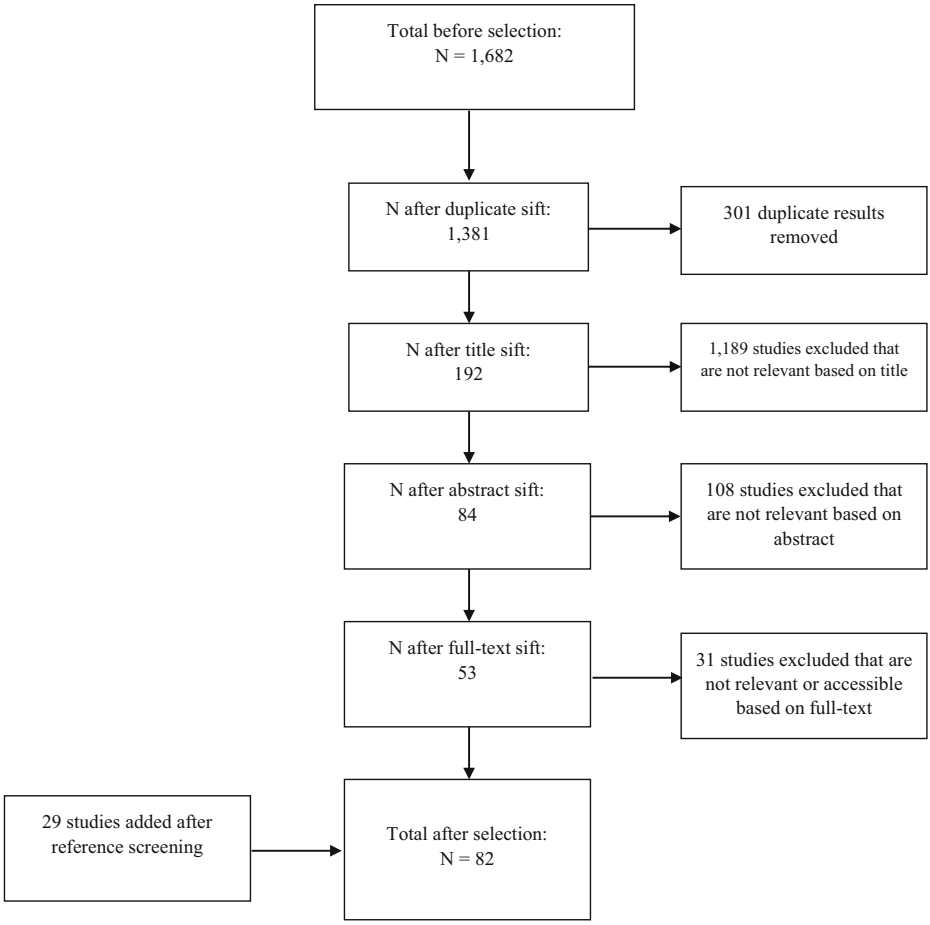

Fig. 1 Flow diagram of the selection procedure

trafficking of human beings for sexual exploitation), and the Belgian Social Inspectorate Services (mainly with regard to trafficking of human beings for labor exploitation). Expert respondents were identified with the help of a media and academic literature search, together with a snowball sampling strategy. As for the offenders involved in this study, two of the interviewees were convicted of sex trafficking, while one interviewee was convicted of labor trafficking. All three participants were serving a prison sentence at the time of the interview. A comprehensive list of the respondents is included under Annex I. Throughout this paper, respondents are referred to by their numerical code, where "E" stands for expert and "C" denotes criminal entrepreneur.

Interviews were conducted between August 2017 and February 2018. The interview guides that were used for this study can be found under Annex II. Written consent was obtained from all the participants. In this connection, all participants received an information letter explaining the research project and clarifying the process of informed consent in addition to the measures taken with a view to maintain confidentiality, such as redacting information that could possibly lead to identification. Before starting the interview, the researcher went over the informed consent form and information letter with the participants. In doing so, we made sure to properly inform our respondents about the purposes of this study and about their rights as a research participant. It was made clear that participation in this study was voluntary and that they could choose to opt out at any moment. We also stressed that anonymity and confidentiality were guaranteed and that respondents had the right to check and modify their interview transcripts. Criminal respondents were alerted to the fact that the interview would touch upon rather personal matters, but, in the same breath, it was clearly stated that they were certainly not obligated to answer all questions. Delicate questions, however, were not an issue for the interviewed offenders. In fact, all three participants spoke frankly and openly about their personal experiences.

Most interviews were conducted in Dutch, with the exception of the interviews with respondent E3 (which was held in French) and respondent C2 (which was held in English). All interview excerpts in this article were translated into English. Interviews with professionals were audio-recorded and transcribed verbatim. Interviews with convicted offenders, however, could not be audio-recorded due to the restrictions of the prison settings in which these interviews were carried out. Further to this, the interviews with detainees were held in a secure interview room at the correctional facility in which they were housed. No third parties were present during the interview process. Potential interviewees were identified and recruited through the assistance of the Belgian Federal Police and the Belgian Prison Authorities, with the researchers setting forth the aims of the study and eliciting consent from the interviewees in person. Afterwards, the qualitative interview data was subject to thematic analysis using the software program NVivo.

As with the majority of studies, there are a number of limitations inherent in this study design. A first limitation of this research is the relatively small sample size. The limited number of criminal respondents should, however, be seen in light of the fact that human trafficking offenders make for a research population that is notoriously difficult to access (Kleemans and Smit 2014). To compound matters, language barriers restricted the number of possible respondents as potential interviewees had to be able to express themselves in either Dutch, English, or French in order to take part in the study. Another important selection mechanism is that all cases that are analyzed in this study exclusively belong to the part of the human trafficking universe that is, in fact, "visible" to the eye of law enforcement agencies. Yet, trafficking in human beings is widely recognized to be a hidden, under-reported, and

under-identified crime (Farrell and de Vries 2019). As follows, these participants cannot be seen as representative of human traffickers in general. The sample of professionals that was included in this research is, for similar reasons, not to be mistaken for a perfect representation of the Belgian anti-trafficking field as whole. This means that there are clear limits to the generalizability of the research results, especially considering the regional focus of the qualitative interviews. The findings of this study may, nevertheless, be transferable to other contexts, as the nexus between trafficking and technology is certainly not specific to the country of Belgium. In any case, the validity of these research results should always be examined, rather than assumed. Lastly, as the methods employed in this research were qualitative in nature, and not quantitative, it is not possible to make statements about the prevalence of technology use in human trafficking operations based on this study.

The Cyber Modus Operandi of Human Traffickers

Concerning the method of operation in human trafficking, the crime of trafficking in persons manifests itself as a series of consecutive steps rather than a single offense. According to Aronowitz (2009), the process covers a total of four stages, namely the recruitment, transportation, and exploitation of victims, and the subsequent management of illicit profits. Throughout the course of the trafficking cycle, offenders make use of digital technologies (Europol 2017b; Elliott and McCartan 2013). With this in mind, the following section specifies the role of the Internet and other technological developments in relation to the different stages of the trafficking process.

Recruitment

As regards the recruitment phase, the Internet "can be used as a hunting ground when targeting vulnerable populations" (Yu 2014, p. 71). More generally speaking, technology has added a whole new dimension to the process of reaching and entrapping potential victims (Boyd et al. 2011; Di Nicola et al. 2017). The Internet in particular has amplified the operating radius of trafficking offenders (Yu 2014) by putting suitable targets with varying socio-economic and geographic backgrounds within their reach (Verham 2015). For this reason, digital communication technologies represent an unparalleled opportunity to gain access to a greater number of potential victims (Greiman and Bain 2013; Latonero et al. 2012; Malby et al. 2015). Besides social media (E1; Latonero et al. 2011; Myria 2017), many online platforms lend themselves to the purpose of roping in possible victims, notably dating sites (Myria 2017; Di Nicola et al. 2017), chat rooms (Latonero et al. 2011), and online classified sites (Europol 2016). Technology also provides the means for the identification and selection of potential victims (Boyd et al. 2011; Greiman and Bain 2013; Lavorgna 2015). Criteria for the selection of trafficking candidates usually revolve around accessibility, vulnerability, and general attractiveness (Kloess et al. 2014; Di Nicola et al. 2017; Yu 2014). Respondent E4 notes in this regard: "what we also see, for example, of the girls that are picked out, they have the most revealing pictures, then they think, ah yes, they are perhaps the most easily approachable for prostitution work." This stage of the online recruiting process is known as hawking (Myria 2017), a term which vividly conveys the image of traffickers preying on their victims.

When it comes to swooping in and approaching suitable targets, recruiters have the choice between two strategies. Offenders either devote their efforts to one person in a process of direct

recruitment, which leaves room for a more personal touch. Alternatively, traffickers cast their net wide and contact as many people as possible in hopes that someone will take the bait, thus engaging in the indirect recruitment of victims (Myria 2017; Yu 2014). As soon as one target falls for the ruse, the offender can easily snowball his way to other victims (Yu 2014). In other words, whereas identifying possible targets is relatively undemanding, persuading potential victims requires more effort (Yu 2014). In this connection, the recruitment process in sex trafficking is often accompanied with a grooming process aimed at gaining the victim's confidence (Boyd et al. 2011; Latonero et al. 2011; Hughes 2014). Grooming in general denotes the process whereby an offender prepares a victim for abuse (Kloess et al. 2014; Myria 2017; Malby et al. 2015). On the whole, the online grooming process of child molesters and lover boys is remarkably similar. Both categories of transgressors share the same objectives: getting access to their victims, ensuring compliance, and maintaining the victim's secrecy (Malby et al. 2015; Broughton 2009). Against this background, the bottom line of a grooming process is to trap suitable targets in a pincher. More specifically, offenders attempt to establish a relationship or emotional connection with their victims while at the same time gaining tighter control over their victims (Kloess et al. 2014; Malby et al. 2015). The lover boy technique in particular hinges on the creation of a state of emotional dependency by making a pretense of romantic interest and seducing the victim (Myria 2017; Di Nicola et al. 2017). This type of sham relationships is evidently marked by a distorted balance of power (Kloess et al. 2014; Di Nicola et al. 2017). Additionally, digital communication technologies may help to lower the victim's psychological barriers (Malby et al. 2015). People generally open up more easily online (Myria 2017), which in turn paves the way for accelerated pseudo-intimate and eroticized interactions (Kloess et al. 2014). Step by step, the victims become more accustomed to sexual activities, and later on to the idea of commercial sexual contacts, as these activities are presented in a sphere of normalcy and acceptance (Malby et al. 2015; Kloess et al. 2014). Respondent C3, for example, first introduced one of his online recruits to the other girls working for the trafficking ring to show her that engaging in prostitution is a normal way to make a living.

Incidental to the process of grooming, offenders seek to subject their victims and obtain unwavering compliance for future exploitation (Kloess et al. 2014; Malby et al. 2015). To this end, traffickers have a wide range of strategies at their disposal, such as coercion, blackmail, threats, violence, persuasion and emotional manipulation, or bribes (Kloess et al. 2014; Myria 2017; Di Nicola et al. 2017). In this regard, technologies have a part in the matter of victim subjection (Lavorgna 2015). Moreover, using the Internet as a playground for recruitment activities brings the advantage of easily getting a hold of all sorts of personal data (Europol 2016; Latonero et al. 2015). Personal information, which is often nonchalantly shared on social networking sites, eases the process of identifying suitable targets (Kunze 2009; Di Nicola et al. 2017). A case in point is the recruitment method of respondent C3, who purposely targeted teenage runaways from juvenile institutions via Facebook. Similarly, personal information enables the recruiter to pick up the personality of his victims more quickly, making it possible for traffickers to present themselves to their targets in the form of a socially engineered persona (E4; Myria 2017; Kloess et al. 2014). Learning about an individual's interests and personal traits and thus delivering a form of tailored deceit is by all means conducive to the swift establishment of a connection with their victims (Di Nicola et al. 2017). In short, the access to personal data provided by online platforms might very well increase the chances of success in recruiting potential trafficking victims (Di Nicola et al. 2017; Yu 2014).

Notwithstanding the general perception that the use of technology is less prevalent within the context of labor exploitation, recruitment on the Internet is also a growing part of the modus operandi of labor traffickers (E7, E8, and E13; Latonero et al. 2015). Traditional recruiting methods such as word-of-mouth advertising are paired with online schemes (C2; Latonero et al. 2015; Hughes 2014; Di Nicola et al. 2017). Conduits for the recruitment of an exploitable workforce in cyberspace include employment websites, online recruitment agencies, social networking sites, and online advertisements (E7 and E13; Hughes 2014; Dixon 2013), which regularly feature standard unqualified but nevertheless well-paid jobs (Europol 2016). For example, respondent E1 mentions that "you can even look for work announcements via the Internet and you will notice that it is mala fide. You know, the classics. Very vague. Very vague about where it is, very vague about what it entails, and so on." In spite of these deceptive opportunities, online recruitment is seemingly less pervasive in the field of labor trafficking when compared with the issue of trafficking for sexual exploitation (Di Nicola et al. 2017). One possible explanation can be found in the target demographic of economical exploitation. Laborers are often recruited from poverty-stricken and underprivileged regions, where access to modern technologies is far from guaranteed (Hughes 2014; Latonero et al. 2015; Di Nicola et al. 2017). Thus, from this perspective, online recruitment in labor trafficking is hindered by a technology gap between victims and perpetrators.

In a general sense, most expert respondents observed a steady rise in the use of online recruitment, both for the purposes of sexual and labor exploitation. However, this trend does not seem to be universal. For one thing, the recruitment technique of respondent C1 can be regarded as a counterexample. In order to recruit his victims, this trafficking offender relied on an SMS-chat application hosted on a Belgian television network, which is, judged by today's standards, quite a low-tech approach. Moreover, some respondents presented a more nuanced picture of the commonness of e-recruitment among human trafficking operations, particularly in cases of labor exploitation. Respondent E3 stated the following on this subject:

> With pure cases of economic exploitation, let's say, recruitment is not like that. Recruiting takes place in bars, by word of mouth. Yes, there are also conversations on Whatsapp, but nothing more. Right. It's not like they are going to sell the work or sell the situation, or sell the person, so to say, over the Internet. On the other hand, with cases of sexual exploitation, there it is something that is growing enormously at the moment, you know.

Transportation

In order to proceed from reeling in suitable targets to actually exploiting them, victims need to be transferred from the source country to the country of destination. As such, the phase of transportation focuses on logistical and travel arrangements (Di Nicola et al. 2017; Watson et al. 2015). Aligning concurrent recruitment, transportation, and exploitative activities requires a significant amount of coordination between the different nodes of a human trafficking ring (Boyd et al. 2011). In these conditions, new technologies notably facilitate the communication and collaborative efforts of trafficking offenders (E1 and E10; Konrad et al. 2017; Malby et al. 2015; Yu 2014). As a matter of fact, throughout the interviews, the Internet and assorted technologies were frequently referred to as "a mode of communication, just like any other mode of communication" (respondent E10).

Where trafficking operations frequently cross borders, so too does the Internet. As a result, not all associates of a trafficking network have to be physically present at the site of exploitation (Lavorgna 2015), meaning that criminal operations can be easily run from a distance (E7; Myria 2017). Not only that, the embracement of online recruitment may also eliminate the need for a local emissary in source countries, thereby effectively erasing a node of the criminal organization (E3 and E6; Lavorgna 2015; Malby et al. 2015). In the same vein, online recruitment might capacitate individual offenders to set up their own small-time trafficking venture (Lavorgna 2015) as it lowers the barriers to enter the human trafficking business (Fraser 2016). Simply put, digital communication technologies hold important managerial and organizational opportunities for human traffickers (E4; Lavorgna 2015; Myria 2017) and can therefore be regarded as an essential business resource (Elliott and McCartan 2013). Or, to use the words of one of the respondents:

> What you find with the whole Internet and social media and cell phone thing, is that obviously it is much easier to maintain contact and to have contact with everyone and everything all over the world. [pauses] Which also makes it easier to put pressure on or threaten people in that way, of course (respondent E6).

Exploitation

The transferring of victims is normally followed by the phase of exploitation. In the case of sex trafficking, victims need to be advertised somehow in order to sell, and consequently profit from, their services. In this connection, technology has modified the way in which trafficking victims are marketed (Europol 2016; Greiman and Bain 2013; Mitchell et al. 2011; Farley et al. 2013). Most importantly, the Internet and related technological advancements allow traffickers to advertise their "commodity" to a considerably larger audience with a minimum of effort (E9; Latonero et al. 2012; Mitchell and Boyd 2014; Di Nicola et al. 2017). At the same time, online platforms are an efficient way to reach an obscure client base (Mitchell and Boyd 2014), as online soliciting offers a more discrete way of talking terms, both for buyers and sellers of sexual relations (C1; Alvari et al. 2016; Verham 2015; Yu 2014). On that account, online solicitation has augmented regular prostitution (Finn and Stalans 2016; Cunningham et al. 2017) to the extent that sex workers either no longer need to advertise themselves on the streets (Alvari et al. 2016; Boyd et al. 2011; Greiman and Bain 2013) or flexibly employ themselves in different segments of the sex industry:

> (…) you see that it is actually mixed. We see a lot of window prostitutes that are also on Redlights as escorts, and when they suddenly get a call from a customer and they, instead of 50 euros for regular sex in window prostitution, they can do an escort job for 350 euros, and so they just leave their window (respondent E5).

With respect to human trafficking activities, however, a mere sense of discretion might prove insufficient in concealing a criminal enterprise. In preference, trafficking offenders mainly hide in plain sight through the use of cryptic terms or coded language and by advertising legitimate services such as massages (Finn and Stalans 2016; Latonero et al. 2011; Di Nicola et al. 2017). For the most part, traffickers are quite flexible in how they advertise their victims (Hughes 2014). Advertising venues stretch from major public websites over to more niche and underground online platforms (Boyd et al. 2011). To specify, the marketing of trafficking victims is associated with social media (Europol 2016; Di Nicola et al. 2017; Finn and Stalans

2016), online classified sites (Portnoff et al. 2017; Latonero et al. 2011; Myria 2017), dedicated escort websites (Europol 2016; Myria 2017; Di Nicola et al. 2017), dating sites (Europol 2016; Finn and Stalans 2016), specialized websites that provide a forum for clients to review the sex workers they visited (Myria 2017; Di Nicola et al. 2017; Finn and Stalans 2016), niche sites tailored to certain paraphilia (Finn and Stalans 2016), and Darknet markets, albeit that the last category appears to be reserved for child sexual exploitation material (Europol 2017b; Andrews et al. 2018) and the procuring of sexual services by minors (Di Nicola et al. 2017). To note, the Darknet is used by a comparatively small number of people, which severely limits its potential as a marketing platform (Howell 2016). In contrary to the wide variety of online advertising venues, it is important to mention the importance of a handful of major market-leading websites (Cunningham et al. 2017; Sanders et al. 2018). With regard to the Belgian context, respondents made mention of sites such as *Redlights* (E5, E6, E8, and E9) or *Seksafspraakjes* (E4).

Beyond catching the attention of potential buyers, communication technologies are also a convenient tool to talk terms and arrange appointments with clients (Europol 2016; Mitchell and Boyd 2014; Hughes 2014). More than that, technology can even be leveraged as a modality of exploitation in and of itself (Malby et al. 2015; Europol 2017a), though such cases were not reported by the respondents in this study. More often than not, noncontact exploitation offenses rely on technological advancements such as webcams (Bach and Dohy 2015; Malby et al. 2015; Yu 2014). A typical example of technology-supported exploitation is the practice of coerced cybersex (Greiman and Bain 2013; Kloess et al. 2014). Along these lines, video hosting services permit offenders to broadcast sexual acts, while locking the content behind a paywall (Boyd et al. 2011; Finn and Stalans 2016; Sanders et al. 2018). In fact, the interactive nature of certain online platforms (Finn and Stalans 2016; Yu 2014) easily allows for the production of made-to-order pornographic material. (Malby et al. 2015).

On top of that, new technologies can be wielded as a means to exercise control (Greiman and Bain 2013; Mitchell and Boyd 2014; Myria 2017). In some cases, trafficking offenders induce compliance by obtaining sexually explicit images (whether taken with or without consent) and subsequently threatening to distribute these pictures to friends or family members (Powell and Henry 2017; Hughes 2014): "Oh, so your parents don't know what you're doing here. Let's take some photographs and send them one" (respondent E1). This type of blackmail is also known as sextortion (Di Nicola et al. 2017) or image-based sexual abuse (Powell and Henry 2017). Aside from emotional wire-pulling, digital surveillance systems (Europol 2016) and location tracking services (Gerry et al. 2016; Europol 2016) allow traffickers to keep a close watch on their victims. To that end, a myriad of technological channels can be employed, including video cameras (E1; Hughes 2014), phone records, spyware, tracking devices (Gerry et al. 2016), and geolocation services offered by social networking sites (Europol 2016). For trafficking offenders, digital surveillance has the added value of monitoring business activities while being physically separated from the site of operation (Europol 2016). Another technology-facilitated method of control is to make victims report back to their exploiters by demanding messages via mobile after each service or by sending pictures in order to verify their location, as pointed out by respondents E1 and E4. More broadly speaking, technology can be used to communicate with victims, to boss them around, and to issue threats (Hughes 2014). Parenthetically, geolocation and related social networking features such as the geo-tagging of pictures might assist in the localization and retrieval of runaway trafficking victims (Myria 2017; Watson et al. 2015; Malby et al. 2015). On a related note, it should be mentioned that, on occasion, traffickers impose restrictions on the use of technology with the aim of further isolating their victims (E1; Boyd et al. 2011; Latonero et al. 2015; Bouché and Shady 2017).

Financial Management

Lastly, most trafficking operations are geared towards making a profit. Consistent with the business-minded side of human trafficking, technology is utilized in the process of financial management (Hughes 2014; Mitchell and Boyd 2014). To take one example, online transactions can involve digital payment systems (Boyd et al. 2011). New technologies could also be brought into play with regard to the transferring and laundering of criminal assets (Hughes 2014). Touching on the subject of money laundering, cryptocurrencies are readily associated with the issue of criminal money management. Much like other digital monetary services, cryptocurrencies can be used for payments (Boyd et al. 2011; Watson et al. 2015), which is certainly the case for criminal transactions on the Darknet. However, Bitcoin is also one of the only accepted forms of payment for the bumping of adult entertainment ads on online classified sites (Portnoff et al. 2017). In general, these alternative payment instruments have attracted the attention of various criminal enterprises by reason of their decentralized configuration (E11), which essentially means that virtual currencies operate independently of the traditional banking system and thus outside the boundaries of governmental and regulatory oversight (Brenig et al. 2015; Watson et al. 2015; Hoyer 2017). And yet, despite the advantages of cryptocurrency-based money laundering, human traffickers seemingly stick to more traditional methods (E2 and E12; Brenig et al. 2015; Europol 2017a). The apparent unpopularity of virtual currencies in human trafficking circles might be a result of the high level of price volatility and the fact that cryptocurrencies are only sporadically accepted as a means of payment, which makes cashing virtual money outside the system rather inconvenient (Brenig et al. 2015). In other words, the main caveat of cryptocurrency-backed money laundering seems to be that "you have to have at least some faith in that whole blockchain technology" (respondent E12). As a corollary, technological advancements like Bitcoin, while facilitative of trafficking activities, are not necessarily promptly incorporated into the human trafficking modus operandi (Watson et al. 2015).

The Use of Technology in the Field of Anti-Trafficking

From the opposed perspective, technology provides opportunities for law enforcement and anti-trafficking efforts alike. In practical terms, digital communication technologies support investigative agencies in identifying, monitoring, and researching trafficking operations (Dixon 2013; Musto and Boyd 2014; Finn and Stalans 2016; Andrews et al. 2016; Farley et al. 2013). Online contents and connected devices are, in the first place, exceptionally rich sources of information, essentially taking the shape of extensive databases holding potentially incriminating material (Alvari et al. 2016; Portnoff et al. 2017). Digital forensic investigation techniques thus might bring various evidentiary leads to light (E4, E5, and E9; Malby et al. 2015). More generally speaking, online information is an extremely valuable resource in all stages of a human trafficking investigation (Deeb-Swihart et al. 2019). In relation to this point, cyberspace offers one of those rare occasions where the notoriously clandestine activity of human trafficking actually surfaces (Weitzer 2015), rendering certain aspects of the process more open to view (Boyd et al. 2011). Online transactions and other types of web-based endeavors usually leave traces of user activity (Latonero et al. 2011; Konrad et al. 2017; Hughes 2014). These digital footmarks might assist the progress of identifying trafficking offenders (Gerry et al. 2016; Myria 2017; Thakor and Boyd 2013). In a broader sense, digital traces of human trafficking operations constitute a new type of

evidence, which can bolster the testimonies of victims in furtherance of building a case against the culprits (Boyd et al. 2011; Mitchell and Boyd 2014; Malby et al. 2015). Similarly, technology can be adopted as a supportive instrument in police interrogations. Respondent E4 remarked that "Facebook is also used, even during interrogations, both of victims and of suspects. They say, yes I will give you the password, and then they start to explain who is who based on the pictures on the profile, so you actually see the whole picture of the network." Social networking sites can also be used to map criminal networks by going through screen names and contact lists (Myria 2017). Furthermore, new technologies bear upon the matter of financial investigation (Myria 2017; Watson et al. 2015). Provided that trafficking offenders resort to some kind of online toolkit to manage their criminal assets, financial monitoring is a promising avenue to go after criminal entrepreneurs and disrupt their cash flow (Watson et al. 2015; Yu 2014). In the same spirit, the exertion of digital communication technologies in human trafficking operations can be turned to the advantage of law enforcement agencies through the ability to conduct undercover work and sting operations (E5; Mitchell and Boyd 2014; Musto and Boyd 2014; Finn and Stalans 2016).

Going from detecting and investigating cases of human trafficking to gaining insight into the workings of this offense, the instances where trafficking in persons manifests itself online shed a different light on the methods and mechanisms intrinsic to this criminal trade, even if not all trafficking activity is reflected online (Alvari et al. 2016; Latonero et al. 2011). As such, online trafficking behavior can be used as a proxy to explore a phenomenon that is otherwise difficult to chart directly (Konrad et al. 2017; Farrell and de Vries 2019; Dubrawski et al. 2015). With regard to the countering of human trafficking efforts, technological advancements might be instrumental to the empowerment of potential targets of criminal exploitation (Watson et al. 2015; Howell 2016). Social networking sites and chat rooms not only function as recruiting hubs, they also grant vulnerable individuals the opportunity to share their encounters with mala fide employment agencies and warn each other of the recruitment schemes devised by criminals (Latonero et al. 2015; Yu 2014). To cite one example, respondent E7 referred to the specialized website *etransport.pl*, which lets truck drivers discuss their working experiences with transport companies (see also Myria 2017). In addition, the wide reach and general omnipresence that typifies many online platforms promotes the boundless dissemination of educational messages and awareness campaigns (Yu 2014).

However, putting technology to use in the fight against human trafficking is not without its challenges. First of all, the sheer abundance of data generated by communication technologies (Aiken and Chan 2015; Boyd et al. 2011; Watson et al. 2015) poses investigators for a "needle-in-a-haystack problem" (Latonero et al. 2011, p. 23). As the pool of publicly available information is nothing short of overwhelming, police work in this area is progressively becoming a big data research problem (Deeb-Swihart et al. 2019; Brewster et al. 2014; Aiken and Chan 2015). In order to redress this issue, intelligent systems[2] using machine learning algorithms and data mining techniques have been proposed by scholars with the purpose of gathering and analyzing data in a way that keeps investigative efforts at a minimum (Farrell and de Vries 2019; Kejriwal and Szekely 2017a; Hundman et al. 2018). Intelligent systems are, of course, capable of processing far greater datasets at a much faster rate than any human would be able to (Dubrawski et al. 2015). Over the past few years, multiple technology-based

[2] More generally speaking, supporting investigative efforts by use of intelligent systems is a burgeoning field of research, which is not limited to the crime of human trafficking, but includes, inter alia, offenses such as illegal arms trade (Hundman et al. 2018).

solutions have been designed with the human trafficking domain in mind (Farrell and de Vries 2019; Szekely et al. 2015).

Within this framework, a first focus of attention is the issue of information extraction (Kejriwal and Szekely 2017a; Dubrawski et al. 2015). Basically, in order to retrieve potentially useful data, websites of interest first have to be scraped for their content, a task that is often carried out by a bot known as a web crawler (McAlister 2015). Different extraction tools have been introduced, which are aimed at different aspects of the trafficking issue (Szekely et al. 2015). In practice, data is mostly crawled from advertising platforms, but the same technologies could be leveraged to detect online recruitment (McAlister 2015). On that score, technology-based systems have been applied to a small variety of virtual trafficking hubs, notably classified ad sites (Ibanez and Gazan 2016a; Wang et al. 2012; Szekely et al. 2015), customer review boards (Bounds et al. 2017; Wang et al. 2012), and social networks (Burbano and Hernández-Alvarez 2018).

Beyond extracting information, a second area of focus concerns data mining techniques (Konrad et al. 2017). Data mining essentially refers to finding connections and discovering patterns across large sets of data. With regard to the question of detecting incidences of human trafficking, these data analytics can be leveraged to construct classifier models that are trained to distinguish between suspicious and non-suspicious ads (Dubrawski et al. 2015). Such an automated classification methodology is, in any case, a step-up from the tedious process of hand-labeling by criminal investigators (Alvari et al. 2017), though it is worth noting that, in this machine learning process, there is still a need for verification from experts in this particular area (Burbano and Hernández-Alvarez 2018).

In order to discern ads that may be tied to trafficking situations, researchers as well as law enforcement agents search for different clues or signals that might be indicative of criminal involvement (Dubrawski et al. 2015). Clues can first and foremost be found in the text sections of escort ads. In this sense, text-based analytics, as a form of data mining, are used to index the content of online ads so as to identify those ads that require further investigation (Bedford et al. 2017; Ibanez and Suthers 2014; Stylianou et al. 2017). To this end, ads can be analyzed for certain language patterns, such as writing the ad in third person (i.e., "she") or in first person plural (i.e., "we") (Alvari et al. 2017). Another approach is to look for specific keywords or phrases (Hultgren et al. 2016). These online, text-based indicators are very often translations of real-world indicators associated with trafficking in human beings (Bounds et al. 2017; Brewster et al. 2014; Tidball et al. 2016). One such example is the advertising of underage victims, which is usually alluded to by using certain innuendos (i.e., "fresh," "new in town"), rather than explicitly mentioned (Hultgren et al. 2018).

On the whole, relying on text-mining techniques to assess whether certain ads are likely to be related to human trafficking is a rapidly advancing, but nevertheless challenging exercise. One critical issue, in this regard, is the lack of ground truth in identifying human trafficking cases (Burbano and Hernández-Alvarez 2018; Alvari et al. 2017; cf. infra). To complicate matters, information from these ads is often noisy, unclear, or even downright deceptive (Wang et al. 2012; Bounds et al. 2017; Burbano and Hernández-Alvarez 2017). In certain instances, online ads are formatted in irregular ways so that they are not machine-readable, but still legible for humans (Kejriwal and Szekely 2017b). A clear example would be a phone number with some of the digits written in full (Kejriwal and Szekely 2018). Other ways in which ads are obfuscated is by overusing special characters or punctuation marks (Kejriwal et al. 2018) or by employing coded language (Szekely et al. 2015; Ibanez and Gazan 2016b). Moreover, the typical wording, way of writing, and content of these ads are all subject to change (Dubrawski

et al. 2015). Take, for example, the recent adoption of emoticons in online solicitation (Burbano and Hernández-Alvarez 2018).

An alternative way in which data mining techniques can be put to use is through entity resolution processes. Entity resolution is principally about finding possible matches within and between datasets (Szekely et al. 2015). Relating to technology-facilitated human trafficking, these data linkage techniques make it possible to cluster corresponding ads, which might include ads that share the same author (Portnoff et al. 2017) or posts that advertise the same individual (Dubrawski et al. 2015). Most often, ads are grouped on the basis of strong matching features, like phone numbers and email addresses or, in the case of one specific entity resolution solution, Bitcoin transactions (Portnoff et al. 2017). These strong features, however, typically last only a short while, as trafficking rings are known to change their contact information at frequent intervals (Dubrawski et al. 2015). To make up for this shortfall, data linkage algorithms further draw on weaker identifying features, such as similarities in language use, photos, or locations (Dubrawski et al. 2015; Szekely et al. 2015).

Taking matters one step further than identifying which entities are most probably related, the same data matching technology offers the potential to uncover *in what ways* these entities are related. Grouping ads and escorts together might result in the discovery of "shared management" systems (Ibanez and Gazan 2016, p. 876), thereby providing a lead to the provider networks that advertise these individuals (Kejriwal and Szekely 2017a; Ibanez and Gazan 2016; Farrell and de Vries 2019). Furthermore, reconstructing and visualizing the relationship patterns in these online networks is well within the ambit of social network analysis, meaning that these techniques lend themselves to mapping out the underlying network structures as well as possibly inferring certain roles within a given organization (Ibanez and Gazan 2016a; Farrell and de Vries 2019; Stylianou et al. 2017). In the same spirit, the ability to identify and track entities can be leveraged to detect movement patterns (Dubrawski et al. 2015).

Whereas the solutions above largely focus on analyzing the text part of escort ads, other approaches take the route of image processing. One suggested avenue, in this regard, is the use of facial recognition technology to detect posts that advertise minors or even known victims (Dalton 2013). Considering the particular case of online child exploitation, a tool known as PhotoDNA has been adapted to the purpose of finding and removing previously identified images of child sexual abuse (Hultgren et al. 2016). Digital image processing also lies at the root of a highly specialized crowdsourcing platform called TraffickCam, which aids investigators in finding the hotel where pictures of trafficking-related ads were taken by comparing these images to a database of hotel room pictures provided by the general public (Stylianou et al. 2017). On that note, a number of technological solutions to human trafficking have embraced the crowdsourcing approach (O'Brien 2017), most notably in the context of reporting suspicious ads (Stylianou et al. 2017) and informing local authorities about suspected cases of trafficking via a mobile application (Roshan et al. 2017).

Part of the aforementioned efforts have resulted in high-powered search engines, designed with law enforcement in mind. Several of these interfaces have already been put into action and are currently being used to support human trafficking investigations (Kejriwal and Szekely 2017a; Szekely et al. 2015; Hoyer 2017). Still, notwithstanding the undeniable progress that has been made, it is important to note that most of the present initiatives are solely applicable to online ads for sexual services and that, thus far, these breakthrough technologies have failed to address the issue of labor trafficking (Deeb-Swihart et al. 2019). Turning to how things stand in Belgium, multiple respondents (i.e., respondents E1, E4, E5, E8, E9, and E10)

remarked that established sites of activity are indeed monitored by law enforcement personnel, but, to all appearances, a technology-based system is not yet in place. A complicating factor, which is also a distinctly Belgian issue, is that cooperating with some of these website administrators remains somewhat of a legal gray area. As respondent E4 explains: "(…) the problem is, you cannot formalize it. The public prosecutor's office cannot formalize this because in Belgium, unlike in the Netherlands, in the Netherlands it is allowed to advertise prostitution activities, but in Belgium you are not allowed to advertise prostitution activities, because it is prohibited."

Regardless of technological solutions, identifying human trafficking incidents is far from straightforward (Latonero et al. 2011). There is simply no hard truth in differentiating between the regular use and the criminal abuse of these technologies (Mendel and Sharapov 2016). As indicated above, the vast array of ads posted on the Internet to market legitimate escort, massage, and dating services is dotted with identical ads put online by third parties looking to upgrade their exploitative business (Finn and Stalans 2016; Perer 2012). Respondent E1 puts it as follows: "The problem is (…) you never know a priori whether an ad is related to prostitution as such or exploitation." The same applies to deciphering which job advertisements will result in labor trafficking (Latonero et al. 2011). Pinpointing technology-facilitated human trafficking thus requires, at the very least, a significant level of domain expertise (Portnoff et al. 2017; Musto and Boyd 2014). Red flags in job ads such as poor language and generic job descriptions or, in the case of sexual exploitation, the advertising of underage girls, specific nationalities, and cheap prices might hint at human trafficking (Di Nicola et al. 2017), yet such indicators are hardly conclusive.

Furthermore, while there is no quick and easy way to identify trafficking operations, proceeding from identification to intervention might be quite as troublesome (Boyd et al. 2011). Traceability, or the ability to retrace online activity to the offenders hiding behind the technology, is a considerable obstacle in technology-induced criminal investigations (Yu 2014). Investigating the cyber-component of trafficking cases also presupposes an increasing level of sophistication in law enforcement agents and implicates a continuous need for training and specialized assistance (Aiken and Chan 2015; Mitchell and Boyd 2014; Dushi 2018; Powell and Henry 2018). As a result of the ever-changing world of technology, traffickers and law enforcement find themselves in an ongoing race where offenders constantly look for new technological feats in order to keep one step ahead of the long arm of the law and police forces try to keep pace with the latest developments in technology (Hughes 2014; Hillman et al. 2014; Watson et al. 2015). In consequence, interventions are limited to those online instruments and platforms that are in fact known to law enforcement agencies (Mendel and Sharapov 2016), meaning that anti-trafficking efforts might converge on particular settings simply because they are the most visible and accessible sites of activity (Musto and Boyd 2014; Finn and Stalans 2016).

Discussion

In an effort to expand on the cyber-component of human trafficking as described above, this concluding section views the nexus between technology and trafficking through the prism of cyber-criminology. As criminal reliance on the Internet appears to be ever-growing (Andrews et al. 2018), the question arises to what extent traditional types of crime are reshaped in the process of migrating to the World Wide Web and, accordingly, to

what degree technology-facilitated offenses challenge our traditional knowledge about these crimes (see also Ryder and Reid 2012). In this regard, cyber criminology, as an emerging scientific discipline, is mainly preoccupied with the question whether cyberspace as a new-fangled focal point of criminal activity calls for new theories to account for Internet-mediated delinquency (Jaishankar 2011). Or, alternatively, should these e-crimes be regarded as familiar crimes that have been merely exported to a different scene of action, which would imply that cyber criminality can be explained by traditional criminological theories (Stalans and Finn 2016; Powell and Henry 2017). The role of technology in trafficking operations as set out above largely echoes the latter interpretation, as technology-facilitated trafficking in persons clearly is a case of "old crime, new tricks." Technology-facilitated human trafficking, then, presents itself as a continuation and further elaboration of conventional forms of trafficking, and not as a complete and dramatic transformation. By way of explanation, technology has not fundamentally changed the nature of trafficking in human beings. The crime obviously predates the breakthrough of digital communication technologies (Latonero et al. 2011; Yu 2014), yet the crux of the matter is that, even after the incorporation of technological aspects, the bottom line of any trafficking operation remains virtually the same. In this sense, technology is not a cause, nor is it a necessary part of the trafficking business, but, like so many other factors, it can contribute to the progression of criminal endeavors (E3; Watson et al. 2015; Yu 2014; Lavorgna 2015). In essence, technological advancements have added another layer to the mode of operation in human trafficking ventures (Aiken and Chan 2015), but, at the same time, the basic premises of their modi operandi remain intact. Put differently, broadening one's area of activity to online platforms mainly serves to enhance the real-world side of the criminal operation (Mendel and Sharapov 2016).

In general, the use of technology in the context of trafficking in human beings is most commonly associated with the recruitment and advertisement of victims (Latonero et al. 2012). In fact, many of the expert respondents appeared to share the same fixation. By contrast, this research paper has depicted a wide spectrum of technological applications in trafficking operations. By and large, human trafficking has many faces and the role of technology can be widely different as a result of this variegation (Boyd et al. 2011; Di Nicola et al. 2017; Latonero et al. 2012). Considering the different modalities of exploitation (Watson et al. 2015), embracing technology seems to be the exception rather than the rule within the sphere of labor exploitation (Latonero et al. 2011; Di Nicola et al. 2017). Conversely, in the sex trafficking business, bringing technologically advanced methods to bear is close to standard practice (Mitchell and Boyd 2014; Hughes 2014). Then again, it should be noted that this ostensible disparity might be a reflection of the disproportionate amount of attention paid to sexual exploitation both in research and anti-trafficking rhetoric (Watson et al. 2015). To illustrate, one of the experts remarked that:

> (…) it is known that the phenomenon is present in economic exploitation. It is indeed known, but, yeah, it's just that the combating should be much more focused on it. You also see that the police, for instance, received intense training for this two or three years ago. For the social inspectorate, so far nothing, actually, so, but that will happen in the future (respondent E4).

On that account, evidence is emerging that online technologies are leaving their mark on both the labor and organ trafficking markets, though it is abundantly clear that, for the most part, these subjects are still relatively under-exposed (Fraser 2016; Latonero et al. 2015). In any

case, the combination of a multifaceted and highly adaptive crime with an exceedingly variable instrument creates endless possibilities in terms of capitalizing on technological developments (Gerry et al. 2016; Mitchell and Boyd 2014). All in all, technology-facilitated human trafficking is a lot more diversified and diffuse than it was originally made out to be (Latonero et al. 2012).

Even though technology falls short of transforming the very essence of human trafficking offenses, advances in communication technologies do in fact change which behaviors are observable and which are not (Boyd et al. 2011; Thakor and Boyd 2013; Latonero et al. 2011). The visibility of trafficking activities is closely connected to two conflicting objectives that shape the advertising strategies of trafficking offenders, namely hiding one's illegal operation from law enforcement agencies and disclosing one's business to clients. Accordingly, criminal entrepreneurs have to make a trade-off between attracting more customers and evading detection (Lavorgna 2015). The Internet, in this respect, provides traffickers with pseudo-anonymous working conditions. Strictly speaking, covering one's online tracks to the extent of complete and utter anonymity is well-nigh impossible. Nevertheless, even though the traces left behind by criminal activity essentially raise the visibility of technology-facilitated trafficking, these traces are not always easily recognizable or interpretable as such, or are altogether eclipsed by the sheer volume of regular Internet activity (Mitchell and Boyd 2014; Yu 2014). Paradoxically, the Internet renders human trafficking activity both more visible and less detectable. Be that as it may, most trafficking offenders cannot hide behind their screens forever, as criminal transactions in this field mainly involve actual people and can only take place beyond the bounds of virtual reality (E3; Yu 2014).

Concerning the general perception of the use of technology in trafficking operations, Verham 2015, p. 5) states the following: "If the Internet is referenced in public media, it is viewed as an external catalyst, separated from trafficking itself." In the global scheme of things, technology is readily held responsible for perceived outbursts of trafficking activity, thereby "ascribing agency to media technologies as 'drivers' of sex trafficking" (Thakor and Boyd 2013, p. 285). This reading of the connection between trafficking and technology fails to recognize the tight interweaving between both phenomena (Verham 2015). Moreover, new technologies are in no way intrinsically harmful (Latonero et al. 2011), let alone to blame for increased occurrences of exploitation (Hillman et al. 2014). Any claim that technology contributes to a growth in trafficking activity is largely unfounded (Musto and Boyd 2014), as the relative incidence of trafficking in persons is still unknown (Weitzer 2015; Farrell and de Vries 2019). Conversely, the inclusion of technology in the criminal modus operandi should be regarded as ordinary evolution (Hillman et al. 2014). More specifically, the unique features of digital communication technologies resonate with some of the most prominent leading motifs in the human trafficking business. First of all, trafficking networks are known for their flexibility and resourcefulness (Konrad et al. 2017; Hughes 2014; Gerry et al. 2016). Mobile devices, technology-facilitated schemes, and enhanced interconnectivity, in turn, have only amplified the flexibility of criminal entrepreneurs (Hughes 2014). Organized crime groups, much like modern technologies, are on a track of continuous development (Lavorgna 2015). Secondly, technology clearly appeals to the business side of trafficking in human beings. Technology-facilitated human trafficking allows criminal entrepreneurs to carry out their undertakings more quickly and efficiently (Latonero et al. 2012). Information technology in particular has enhanced the effectivity of trafficking enterprises by extending the reach of recruitment and advertisement efforts while at the same time lowering the

operating costs for these activities (Myria 2017; Malby et al. 2015; Lavorgna 2015). In this sense, turning to a cyber-assisted mode of operation can be a very economical move (Yu 2014).

In conclusion, the Internet is popularly believed to have opened a Pandora's box of threats with regard to human trafficking activity. Yet, as follows from the preceding interpretation of the trafficking-technology connection and the data that we have collected empirically, the role of digital communication technologies should be kept in perspective (Mitchell et al. 2011; Stalans and Finn 2016). Advances in technology can hardly be described as impelling causes for exploitative practices. Rather, the Internet and related developments have partly elevated pre-existing manners of working. A clear finding of this study, in this regard, is that technology and traditional techniques operate in tandem all throughout the trafficking process (Hughes 2014; Fraser 2016). On that account, criminal investigators and other stakeholders would be well advised to integrate a certain technological awareness into their considerations while leaving room to draw the cyber component of a case together with more established sources of evidence (Mitchell et al. 2011; Watson et al. 2015; Verham 2015). Ignoring the role of technology altogether would be erroneous (Gerry et al. 2016). Overstating its importance, by contrast, does not move our understanding of the matter much further forward either.

Conclusion

When considering the relationship between trafficking in human beings on the one hand and technological advancements on the other, a commonly held view is that "(…) sex trafficking itself has moved online, and the use of Internet technology in this respect only exacerbates the problem of trafficking as it increases the potential for individuals to be exploited regardless of geographical boundaries" (Elliott and McCartan 2013, p. 259). Throughout this article, we aimed to unpack these very assumptions, which are most often based on anecdotal evidence and speculation instead of empirical research. In the sections above, it is argued that digital communication technologies may be employed at each and every phase of the trafficking process. Similarly, technological resources can play a meaningful role at all stages of a criminal investigation. However, the interviews with trafficking offenders and anti-trafficking professionals made it apparent that, in both cases, adoption of technology is neither universal nor complete. In practice, the extent to which technology is used, either by criminal entrepreneurs or by law enforcement agencies, is still unclear and appears to vary significantly. In this connection, as far as the criminal exploitation of technology is concerned, it is noted that "online environments are no longer the safe havens they were once thought to be" (Fraser 2016, p. 111). Framing human trafficking as a technological problem, in this sense, seems to be a bit of a stretch (see also Milivojevic and Segrave 2017).

Even though dependence on the Internet is far from all-pervading, online technologies have undoubtedly left their mark on the human trafficking industry. Above all, technological developments have expanded the trafficker's repertoire in a manner that is seemingly unprecedented. In the same breath, modern technologies have hardly replaced more classic methods of operating in trafficking enterprises. Instead, old and new systems are applied flexibly, with both strategies regularly working in parallel. As a rule, the use of new technology principally affects the logistics of criminal operations as opposed to the

core of the trafficking business. In other words, the means might vary, but the basic formula of the crime persists. In addition, the opportunities offered by communication technologies have reduced some of the entry barriers to the business of trafficking in human beings, thereby creating a more level playing field for individual offenders and smaller criminal networks. As a result, technology-facilitated human trafficking appears to be tied to a pattern of sophistication and diversification, rather than escalation. This, in turn, necessitates an equally increasing level of sophistication on the side of anti-trafficking agencies. While advances in technology have been framed both "as part of the problem (…) and part of the solution" (Milivojevic and Segrave 2017, pp. 29–30), there are obvious differences in the digital toolbox of offenders and investigators that should not be discounted. Referring to the Belgian authorities that were interviewed during this study, the image they conveyed, if only obliquely, was that of a patchwork quilt of varying tools and instruments, ultimately lacking any grand design or focus. In this context, a nuanced and constructive approach that actively mirrors this changeful threat landscape is, by all means, long overdue.

Compliance with Ethical Standards

Conflicts of Interest The authors declare that they have no conflicts of interest.

Informed Consent Written informed consent was obtained from all individual participants included in the study. All participants received an information letter explaining the research project and clarifying the process of informed consent.

Annex I List of respondents

Respondent code	Position/department	Institution/role
E1	Head of central human trafficking unit	Belgian Federal Police
E2	Strategic analyst	Belgian Financial Intelligence Processing Unit (CTIF-CFI)
E3	Head of human trafficking unit	Inspectorate of the National Social Security Office, Belgium
E4	Policy analyst	Federal Migration Centre Myria, Belgium
E5	Head of prostitution unit	Belgian Local Police
E6	Legal expert	Specialized Reception Centre for Victims of Human Trafficking, Belgium
E7	Labor prosecutor	Public Prosecutor's Office, Belgium
E8	Public prosecutor	Public Prosecutor's Office, Belgium
E9	Head of human trafficking unit	Belgian Federal Police
E10	Public prosecutor	Public Prosecutor's Office, Belgium
E11	Head of asset investigation and recovery unit	Belgian Federal Police
E12	Strategic analyst	Belgian Financial Intelligence Processing Unit (CTIF-CFI)
E13	Labor prosecutor	Public Prosecutor's Office, Belgium
C1	Criminal entrepreneur	Souteneur
C2	Criminal entrepreneur	Employer
C3	Criminal entrepreneur	Souteneur

Annex II Interview guides

Interview guide for experts
1. Introductory questions
- Institutional and professional background of the expert involved- General overview of the kind of cases handled by the institution
2. General characteristics of human trafficking activities in Belgium
- Market structure
- Profile of the perpetrators
- Main modi operandi
- Use of ICTs in business model:
To what extent do human trafficking groups employ ICTs in their activities?How have ICTs changed the business model of these groups?
3. Financial aspects of human trafficking activities in Belgium
- Starting capital
- Settlement of payments:
In what ways have ICTs affected the settlement of payments?
How have ICTs changed the patterns for collecting money earned by victims?
- Business costs:
How have ICTs changed the costs of human trafficking groups?
- Profits and profit sharing:
In what ways have ICTs affected the profits of human traffickers?
How have ICTs changed money laundering practices?
How have ICTs changed risk mitigation strategies with regard to evading detection from law enforcement?
Interview guide for criminal entrepreneurs
1. Introductory questions
- Profile and background of the respondent
2. Entering the human trafficking market
- Initial involvement
- Role/position within the trafficking market
- Use of ICTs in business model:
What kind of applications did you use?
How often did you use these applications and with what purpose?
How have ICTs changed your business model?
3. Financial aspects of human trafficking activities
- Sources of financing
- Settlement of payments:
How have ICTs changed the patterns for collecting money earned by victims?
- Business costs:
How have ICTs changed the costs of your business?
- Customers and revenue management:
How did the use of ICTs affect the profits of your business?
How have ICTs changed your strategy to evade detection from law enforcement?

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